

**REMARKS**

**I. Status of the Claims**

Claims 1-31 are pending in this application, the independent claims being claims 1, 6-8, 12-14, 18-20, 24-26, 30 and 31. By this Amendment, claims 1, 8, 14, 20 and 26 are amended.

**II. Summary of Official Action**

In the Official Action, claims 1-5, 8-11, 14-17, 20-23 and 26-29 variously were rejected under 35 U.S.C. §103(a), as unpatentable over U.S. Patent No. 6,856,735 (Chang).

Reconsideration and withdrawal of the rejections respectfully are requested in view of the above amendments and the following remarks.

**III. Allowable Subject Matter**

Initially, Applicants gratefully acknowledge the Examiner's indication that the application contains allowable subject matter, and that claims 6, 7, 12, 13, 18, 19, 24, 25, 30 and 31 are allowed.

**IV. Summary of Telephone Interview**

Applicants' attorney gratefully acknowledges the courtesies extended to him by the Examiner in conducting an informal telephone interview on August 29, 2005. In that interview, Applicants' attorney discussed various novel aspects of the claimed invention, and distinguished the claimed invention over the cited art. In particular, Applicants' attorney reviewed certain arguments previously presented in a personal interview on June 30, 2005, and noted the remarks set forth in the Amendment filed July 11, 2005, distinguishing the claimed "different materials" from a prior art disclosure of two materials having a same base material with different doping levels. Applicants' attorney presented a proposed formal amendment to independent claims 1, 8, 14, 20 and 26 to obviate the outstanding rejections -

that is, to expressly recite the feature of - - different base materials. - - The Examiner tentatively agreed that the proposed amendments overcome the outstanding art rejections.

Applicants believe the present Amendment, including the amendments and the remarks, summarizes the substance of the informal telephone interview.

**V. Claim Amendments**

The rejection of claims 1-5, 8-11, 14-17, 20-23 and 26-29 over the prior art respectfully is traversed. Nevertheless, without conceding the propriety of the rejections, independent claims 1, 8, 14, 20 and 26 have been amended more clearly to recite various novel aspects of the claimed invention, with particular attention to the Examiner's comments. In particular, independent claims 1, 8, 14, 20 and 26 have been amended to recite the feature wherein the light guides and substrate are made of different base materials. Support for the proposed amendments may be found in the original disclosure (e.g., Figs. 1 and 2 and the corresponding text at paragraph nos. [0029] and [0030] of the substitute specification). No new matter has been added.

**VI. Claimed Invention**

The present invention relates to a novel optical transmission device comprising light guides each having light incidence/emissions sections, a substrate which fixes the light guides, and optical elements arranged on the substrate to match the light incidence/emission sections of the light guides. In one aspect, as recited in independent claim 1, the light guides and the substrate are made of different base materials substantially equal in a coefficient of linear expansion and in a rate of dimensional variation due to water absorption

In a similar aspect, as now recited in independent claim 8, the light guides and the substrate are made of different base materials substantially equal in a coefficient of linear expansion and in a water absorption rate.

In another aspect, as now recited in independent claim 14, the substrate and the light guides are made of different base materials, and a positional lag between the light incidence/emission sections and the optical elements arising from a difference between the light guides and the substrate in a rate of dimensional variation due to water absorption is not more than 300  $\mu\text{m}$ .

In another aspect, as now recited in independent claim 20, the substrate and the light guides are made of different base materials, and a total of differences between the substrate and the light guides in a rate of dimensional variation due to linear expansion and the rate of the dimensional variation due to water absorption is defined with respect to a specific relationship according to the light guide size, e.g., not more than 0.6% where the light guide size is 50 mm or less.

In a similar aspect, as now recited in independent claim 26, the substrate and the light guides are made of different base materials, and a relationship between the substrate and the light guides is defined with respect to the light guide size, e.g., a difference in a coefficient of linear expansion is not more than 300% and a difference in a rate of dimensional variation due to water absorption is not more than 0.6% where the light guide size is 50 mm or less.

## **VII. Prior Art Distinguished**

Applicants submit that the prior art fails to anticipate the claimed invention. Moreover, Applicants submit that there are differences between the subject matter sought to be patented and the prior art, such that the subject matter taken as a whole would not have been obvious to one of ordinary skill in the art at the time the invention was made.

The Chang '735 patent relates to tap couplers for fiber optic arrays, and discloses a tap coupler device for an optical array formed either in a waveguide structure or in a V block in which a fiber array may be mounted. However, Applicants submit that the Chang '735 patent fails to disclose or suggest at least the above-described features of the present invention.

Rather, the Chang '735 patent discloses various embodiments of a V block having a substrate made of silicon, glass, ceramic or other material, where the substrate is preferably planar silica on silicon and the waveguides are preferably of germanium doped silica embedded in undoped silica to provide index matching between the input and output fibers and the waveguides. That is, the substrate and light guide are made of the same base material having a different doping material. Nowhere does the Chang '735 patent disclose or suggest the recited relationships between the coefficient of linear expansion, rate of dimensional variation due to water absorption, water absorption rate, and positional lag between the light incidence/emission sections and the optical elements arising from such properties, as disclosed in the present application, let alone disclose or suggest such relationships with respect to a structure including light guides and a substrate made of different base materials, as disclosed in the present specification and recited in claims 1, 8, 14, 20 and 26.

For the above reasons, Applicants submit independent claims 1, 8, 14, 20 and 26 are allowable over the prior art.

Claims 2-5, 9-11, 15-17, 21-23 and 27-29 depend from claims 1, 8, 14, 20 and 26, respectively, and are believed allowable for the same reasons. Moreover, each of these dependent claims recites additional features in combination with the features of its respective base claim, and is believed allowable in its own right. Individual consideration of the dependent claims respectfully is requested.

#### **VIII. Entry of the Amendment is Proper under 37 C.F.R. §1.116**

Entry of the amendments is proper under 37 CFR §1.116 because the amendments: (a) place the application in condition for allowance (for the reasons discussed herein); (b) do not raise any new issue requiring further search and/or consideration (as the amendments amplify issues previously discussed throughout prosecution); (c) satisfy a requirement of form asserted in the previous Office Action; (d) do not present any additional claims without

canceling a corresponding number of finally rejected claims; and (e) place the application in better form for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented because they are made in response to arguments raised in the final rejection. Entry of the amendments is thus respectfully requested.

**IX. Conclusion**

Applicants believe the present Amendment is responsive to each of the points raised by the Examiner in the Official Action and the personal interview, and submit that the application is in condition for allowance. Favorable consideration of the claims and passage to issue of the subject application at the Examiner's earliest convenience earnestly are solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

  
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